

Title (en)  
RESIN-SEALED ELECTRONIC CONTROL DEVICE

Title (de)  
HARZVERSIEGELTE ELEKTRONISCHE STEUERUNGSVORRICHTUNG

Title (fr)  
DISPOSITIF DE COMMANDE ÉLECTRONIQUE MOULÉ DANS LA RÉSINE

Publication  
**EP 2960936 A4 20161019 (EN)**

Application  
**EP 13875898 A 20130222**

Priority  
JP 2013054431 W 20130222

Abstract (en)  
[origin: EP2960936A1] The present invention is intended to increase the moisture resistance of a resin-sealed electronic control device. The resin-sealed electronic control device includes: a semiconductor chip (2); a chip capacitor (3); a chip resistor (4); a bonding member (5); a substrate (6); a case (7); a heat radiating plate (8); a glass coating (9); and a first sealing material (10). The glass coating (9) directly covers the electronic circuit formed by the element group including: the semiconductor chip (2); the chip capacitor (3); and the chip resistor (4), the bonding member (5) and the substrate (6), and is sealed by the first sealing material (10). By being water impermeable, the glass coating (9) prevents water absorption in the vicinity of the element group, and can prevent an increase in the leak current of the semiconductor chip (2) due to water absorption, and an insulation performance drop such as lowered insulation resistance caused by migration within the element group.

IPC 8 full level  
**H01L 23/29** (2006.01); **H01L 23/053** (2006.01); **H01L 23/24** (2006.01); **H01L 23/28** (2006.01); **H01L 23/31** (2006.01); **H01L 25/07** (2006.01); **H01L 25/16** (2006.01)

CPC (source: EP US)  
**H01L 23/053** (2013.01 - EP US); **H01L 23/24** (2013.01 - EP US); **H01L 23/291** (2013.01 - EP US); **H01L 23/3107** (2013.01 - US); **H01L 23/564** (2013.01 - EP US); **H01L 24/40** (2013.01 - EP US); **H01L 24/49** (2013.01 - EP US); **H01L 25/072** (2013.01 - EP US); **H01L 25/16** (2013.01 - EP US); **H01L 24/37** (2013.01 - EP US); **H01L 24/45** (2013.01 - EP US); **H01L 24/48** (2013.01 - EP US); **H01L 2224/32225** (2013.01 - EP); **H01L 2224/37124** (2013.01 - EP US); **H01L 2224/40095** (2013.01 - EP US); **H01L 2224/40225** (2013.01 - EP US); **H01L 2224/45014** (2013.01 - EP US); **H01L 2224/45124** (2013.01 - EP US); **H01L 2224/45147** (2013.01 - EP US); **H01L 2224/48091** (2013.01 - EP US); **H01L 2224/4903** (2013.01 - EP US); **H01L 2224/73265** (2013.01 - EP US); **H01L 2224/83801** (2013.01 - EP US); **H01L 2224/8384** (2013.01 - EP US); **H01L 2224/8389** (2013.01 - EP US); **H01L 2224/84801** (2013.01 - EP US); **H01L 2224/8484** (2013.01 - EP US); **H01L 2224/8485** (2013.01 - EP US); **H01L 2224/8489** (2013.01 - EP US); **H01L 2224/8592** (2013.01 - EP US); **H01L 2924/00014** (2013.01 - EP US); **H01L 2924/15747** (2013.01 - EP US); **H01L 2924/181** (2013.01 - EP US); **H01L 2924/19105** (2013.01 - EP US); **H01L 2924/19106** (2013.01 - EP US); **H01L 2924/351** (2013.01 - EP US)

C-Set (source: EP US)

EP  
1. **H01L 2224/48091 + H01L 2924/00014**  
2. **H01L 2224/8384 + H01L 2924/00014**  
3. **H01L 2924/00014 + H01L 2224/45014 + H01L 2924/206**  
4. **H01L 2924/00014 + H01L 2224/73221**  
5. **H01L 2924/351 + H01L 2924/00**  
6. **H01L 2924/15747 + H01L 2924/00**  
7. **H01L 2924/181 + H01L 2924/00012**  
8. **H01L 2224/45147 + H01L 2924/00014**  
9. **H01L 2224/45124 + H01L 2924/00014**  
10. **H01L 2224/84801 + H01L 2924/00014**  
11. **H01L 2224/8484 + H01L 2924/00014**  
12. **H01L 2224/83801 + H01L 2924/00014**  
US  
1. **H01L 2224/48091 + H01L 2924/00014**  
2. **H01L 2224/8384 + H01L 2924/00014**  
3. **H01L 2924/00014 + H01L 2224/45014 + H01L 2924/206**  
4. **H01L 2924/351 + H01L 2924/00**  
5. **H01L 2924/15747 + H01L 2924/00**  
6. **H01L 2924/181 + H01L 2924/00012**  
7. **H01L 2224/45147 + H01L 2924/00014**  
8. **H01L 2224/45124 + H01L 2924/00014**  
9. **H01L 2224/84801 + H01L 2924/00014**  
10. **H01L 2224/8484 + H01L 2924/00014**  
11. **H01L 2224/83801 + H01L 2924/00014**

Citation (search report)  
• [Y] US 2010164083 A1 20100701 - YIM MYUNG JIN [US]  
• [Y] WO 2013005600 A1 20130110 - HITACHI LTD [JP], et al & US 2014145122 A1 20140529 - SAWAI YUICHI [JP], et al  
• [Y] US 2009321121 A1 20091231 - KAWAKAMI HIROMICHI [JP], et al  
• [A] US 2010044841 A1 20100225 - MAHLER JOACHIM [DE], et al  
• [A] WO 2012020694 A1 20120216 - HITACHI LTD [JP], et al  
• See references of WO 2014128899A1

Cited by  
EP4084062A1

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AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

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DOCDB simple family (application)

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